

**REMARKS/ARGUMENTS**

Claims 1-21 are pending in the present application. By the present response, claims 1-4, 6-11, 13-21 are amended. Reconsideration of the claims is respectfully requested.

**I. Examiner Interview**

The Examiner is thanked for the courtesy of an interview, even though no agreement was reached. The claim amendments have been re-written as a result of the interview.

**II. 35 U.S.C. § 101: Claim 15**

Claim 15 stands rejected under 35 U.S.C. § 101 as being directed towards non-statutory subject matter. This rejection is respectfully traversed.

The rejection asserts that claim 15 is not limited to tangible embodiments. No basis is present for holding a computer usable medium claim non-statutory because the medium may be allegedly "intangible." The MPEP states:

In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). (emphasis added)

**MPEP 2106 (IV)(B)(1)**

Claim 15 recites clearly functional descriptive material since it imparts functionality when employed as a computer component. Moreover, the functional descriptive material of claim 15 is recorded on "some" computer-readable medium. In the above context, the term "some" means "any" computer-readable medium. The MPEP does not draw any distinctions between one type of media that is considered to be statutory and another type of media that is considered to be non-statutory. To the contrary, the MPEP clearly states that as long as the functional descriptive material is in "some"

computer-readable medium, it should be considered statutory. The only exceptions to this statement in the MPEP are functional descriptive material that does not generate a useful, concrete and tangible result, e.g., functional descriptive material composed completely of pure mathematical concepts that provide no practical result. Claim 15 clearly recites a useful, concrete and tangible result in that information is transmitted to clients, with the information being transmitted at rates determined by the described method. This is not just some disembodied mathematical concept or abstract idea.

Thus, claim 15 is directed to functional descriptive material that provides a useful, concrete and tangible result, and which is embodied on "some" computer-readable medium. Therefore, claim 15 is statutory and the rejection of the claims under 35 U.S.C. § 101 has been overcome.

### III. Objection to Claims: Claims 3-4 and 18-21

Claims 3-4 have been objected to for terminology inconsistent with claim 1. The term "user" in these claims has been replaced with "client", as required by the Examiner.

Claims 18-21 have also been objected to for terminology inconsistent with claim 15. The term "method" in these claims has been replaced with "computer program product", as required by the Examiner.

These objections are now overcome.

### IV. 35 U.S.C. § 102, Anticipation: Claims 1-3 and 5-6

Claims 1-3 and 5-6 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Nielsen, Latency-Reducing Bandwidth-Prioritization for Network Servers and Clients, U.S. Patent No. 6,968,379, November 22, 2005 (hereinafter "Nielsen"). This rejection is respectfully traversed.

The rejection states:

Regarding claim 1, Nielsen teaches a method of transmitting information on a network (Fig. 2A and Fig. 3), comprising:

sending information to a plurality of clients across said network ("transmitting an HTML document and a JPG file to one client and a GIF file to another client", col. 6 lines 34-36), wherein each active client is allocated a corresponding initial amount of bandwidth (amount of bandwidth 320, 330, 340 and 350, Fig. 3) for transfer of information (i.e., the server 300 has a predetermined amount of bandwidth N 310 which is must divide 320, 330, 340, and 350 between multiple clients 360, 370, 380, and 390, Fig. 3 col. 4 lines 48-55), according to priority assign to said client (col. 4 lines 52-55 and col. 7 lines 47-64).

Office Action dated February 28, 2006, item 10, pages 4-5

Claim 1 has been amended to more clearly recite the method by which initial allocations of bandwidth are made. These amendments are supported by the specification on page 8, line 29 through page 10, line 19. This claim now reads:

1. (Amended) A method of transmitting information on a network, comprising:  
sending information to a plurality of clients across said network, wherein each active client is allocated a corresponding initial amount of bandwidth for transfer of information such that a first portion of bandwidth equal to  $x$  is allocated to active clients having a first priority and a second portion of bandwidth equal to  $y$  is allocated to active clients having a second priority that is lower than said first priority, wherein  $x$  is greater than  $y$ ;

when a first active client is operating with a respective allocation and a portion of said first client's respective allocation is not used in a given time period, reducing said first client's respective allocation by the amount of said portion and redistributing said portion of bandwidth among members of a first set of active clients, each member of said first set of active clients having used all of a respective allocation of bandwidth;

wherein said method seeks to utilize all portions of available bandwidth.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983).

Nielson does not anticipate the invention recited in claim 1 because this patent does not identically show each and every feature of the claim. Specifically, Nielson does not disclose that allocations of bandwidth are given to clients, according to their priorities. Rather, this patent allocates bandwidth to connections, according to their priorities, as shown in the following excerpt:

FIG. 5 is a database schema organized as an exemplary way for storing connection information about clients actively involved in retrievals. The Allocation Utilization Table (AUT) 500 shown is a data structure used to track the status of each active current connection. For each such active current connection the file name 510, priority 520 (determined from FIG. 4), allocated bandwidth 530, utilized bandwidth 540, and a recalculation Boolean variable 550 are stored in the AUT. The AUT is used to provide the data for the bandwidth reallocation algorithm of FIG. 7. In rows 560 and 565 it should be noted that the allocated bandwidth exceeds the utilized bandwidth. When this difference exceeds a threshold, the recalculation variables are automatically set to FALSE to prevent re-allocation of more bandwidth than the connection can utilize.

Nielson, column 4, line 63 through column 5, line 10, emphasis added

Nielson does mention the use of client priorities in the following excerpt, but it remains true that the priority is given to "web pages", i.e., the connection, even when the given priority is client based:

As another supplement or alternative to the preferred embodiment, the priority given to web pages could be based on information about the person requesting them. For example, valued customers can be given higher priority.

Nielson, column 7, lines 52-55

The difference between Nielson's use of client priorities and the invention recited in claim 1 may not be immediately obvious because the examples used in both Nielson and the present application show each client establishing a single connection, which is not necessarily true in reality. The difference between the two methods is best illustrated in a denial of service attack, to which Nielson is vulnerable. In a very simplified exemplary situation, client A and client B are the only clients active on a given website. Client A is a valued client and is assigned a priority value of 5, while client B is a low priority client with a priority of 1. However, client B has chosen to mount an attack on the website by submitting 1,000 requests for files on different connections.

Using the model disclosed in Nielson, client A submits a request for the single file and is assigned a line in the Allocated Utilization Table (AUT) with a priority of 5. Client B submits requests for 1,000 files, each on a separate connection and receives 1,000 lines in the AUT, each line having a priority of 1. According to the formula illustrated in Figure 8B of Nielson, the sum of priorities is 1005; when the bandwidth is allocated, client A receives only 5 of the 1005 units into which the total bandwidth is divided and client B receives the remaining 1,000 of the 1005 units of bandwidth, one unit for each of the 1,000 connections. Client B has clearly succeeded in denying priority service to client A.

In contrast, the model recited in claim 1 assigns bandwidth by client according to their respective priorities. With only two clients in this example, client A would be in the first group, client B would be in the second group that has a lower priority. As further recited in this claim, regardless of the actual amounts given to each client, client A would receive a greater initial allocation of bandwidth than client B. Even though client B made 1,000 requests on different connections, all 1,000 requests would be recognized as belonging to a single client and client B would receive a lesser amount of bandwidth for all of the 1,000 requests than client A receives for its single request. If the priorities were each given a unit of bandwidth, client A with a priority of 5, would receive 5 of the 6 total units of bandwidth, while client B would receive only 1 of the 6 units of bandwidth. As shown by this example, the seemingly small difference between Nielson and the invention recited in claim 1 can greatly affect the outcome of a denial-of-service attack.

The example illustrates that Nielson discloses a method different from the method disclosed in exemplary claim 1. Therefore, since Nielson does not meet the features of "*sending information to a plurality of clients across said network, wherein each active client is allocated a corresponding initial amount of bandwidth for transfer of information such that a first portion of bandwidth equal to  $x$  is allocated to active clients having a first priority and a second portion of bandwidth equal to  $y$  is allocated to active clients having a second priority that is lower than said first priority, wherein  $x$  is greater than  $y$* ", this reference does not anticipate the invention recited in claim 1.

Since claims 2-3 and 5-6 depend from claim 1, the same distinctions between Nielsen and the invention recited in claim also applies to these claims. Additionally, these claims recite other additional combinations of features not suggested by the reference.

In particular, claim 6 recites "*wherein respective initial amounts of bandwidth are allocated to each client as a percentage of total bandwidth calculated according to a respective priority and the number of active clients*". Nielsen is not allocating bandwidth to active clients according to their priorities; rather, this patent is allocating bandwidth to active connections according to their priorities.

It is respectfully urged that the rejection of claims 1-3 and 5-6 have been overcome.

Furthermore, Nielsen does not teach, suggest, or give any incentive to make the needed changes to reach the presently claimed invention. Even when Nielsen gives priority to specific clients, the bandwidth is always allocated to a connection rather than to a client. Absent the examiner pointing out some teaching or incentive to modify Nielsen to look only to the client, one of ordinary skill in the art would not be led to modify Nielsen to reach the present invention when the reference is examined as a whole. Absent some teaching, suggestion, or incentive to modify Nielsen in this manner, the presently claimed invention can be reached only through an improper use of hindsight using the applicants' disclosure as a template to make the necessary changes to reach the claimed invention.

Therefore, the rejection of claims 1-3 and 5-6 under 35 U.S.C. § 102(e) has been overcome.

**V. 35 U.S.C. § 103, Obviousness: Claims 8-10, 12-17, and 19-21**

Claims 8-10, 12-17, and 19-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nielsen in view of Pandya et al., Software, Systems and Methods for Managing a Distributed Network, U.S. Patent No. 6,671,724, December 30, 2003 (hereinafter "Pandya"). This rejection is respectfully traversed.

The rejection states:

Regarding claim 8, Nielsen teaches a server (server 220, Fig. 2A) for transmitting information on a network (network 200, Fig. 2A), said server comprising

... Nielsen does not explicitly teach allocate bandwidth to multiple groups of users having priorities.

Pandya, in the same of endeavor, teaches allocate bandwidth to multiple groups - of users having priorities (col. 15 line 46-col. 16 lines 20, and col. 21 lines 6-16).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of Nielsen to allocate bandwidth to groups of users according to their associated priorities as in Pandya. One would be motivated to do to allow available bandwidth to be efficiently utilized among different groups of users with different priority level (Pandya, col. 15 lines 64-65).

Office Action dated February 28, 2006, pages 7-8

One item needs to be clarified in this rejection, the statement that "*Nielsen does not ... allocate bandwidth to multiple groups*". Applicants have not intended to imply that bandwidth is allocated to groups; instead the bandwidth is allocated to members of groups, i.e., the clients. Claims 8 and 15 have been amended to recite that the bandwidth is redistributed "among" the members of a group rather than "to" the group. The Examiner is thanked for highlighting this possible interpretation.

As amended, claim 8 is a device counterpart to method claim 1 and contains the same features described in claim 1 above. In the same manner discussed in the 102 rejection above, Nielson does not show or suggest the features that are ascribed to this patent, specifically the allocation of bandwidth by client priority. Specifically, Nielson does not show or suggest the feature "*first instructions for allocating a first portion of bandwidth equal to  $x$  to ones of said active clients having a first priority and for allocating a second portion of bandwidth equal to  $y$  to ones of said active clients having a second priority that is lower than said first priority, wherein  $x$  is greater than  $y$* ". Neither does Pandya show or suggest this feature. Since neither of the references show or suggest this feature, the rejection is overcome for claim 8. Further, claim 15 is rejected for the same reasons as claim 8 and is allowable for the same reasons. The other claims in this group are dependent on either claim 8 or claim 15, and so inherit the allowability of their parent claim. Additionally, these dependent claims recite other additional combinations of features not suggested by the reference.

In particular, claim 13 recites "*wherein respective initial amounts of bandwidth are allocated to each client as a percentage of total bandwidth calculated according to a respective priority and the number of active clients*". Nielson is not allocating bandwidth according to the number of active clients plus priority, but is allocating bandwidth according to the number of connections plus priority.

Therefore, the rejection of claims 8-10, 12-17, and 19-21 under 35 U.S.C. § 103(a) has been overcome.

#### VI. 35 U.S.C. § 103, Obviousness: Claim 7

The examiner has rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Nielson. This rejection is respectfully traversed.

Claim 7 is dependent on claim 1. Since claim 1 has been shown to distinguish over Nielson, claim 7 inherits the allowability of its independent claim. Specifically, Nielson does not show that initial allocations of bandwidth are made to clients, rather than to connections and so does not meet the feature of "*sending information to a plurality of clients across said network, wherein each active client is allocated a corresponding initial amount of bandwidth for transfer of information such that a first portion of bandwidth equal to  $x$  is allocated to active clients having a first priority and a second portion of*

*bandwidth equal to y is allocated to active clients having a second priority that is lower than said first priority, wherein x is greater than y".*

Therefore, the rejection of claim 7 under 35 U.S.C. § 103(a) has been overcome.

**VII. Objection to Claims: Claims 4, 11, and 18**

Claims 4, 11, and 18 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. The Examiner is thanked for indicating allowable subject matter. However, the independent claims for these dependent claims have been amended in a manner that is believed to make the independent claims allowable. These claims are therefore believed to be dependent on allowable claims and this objection is thus overcome. It is noted that these claims have been amended in formal matters only, to provide correct antecedent basis, to change "group" to "set" and to change the numbering of recited groups, as necessitated by the recitations of first and second sets of clients in the independent claims.

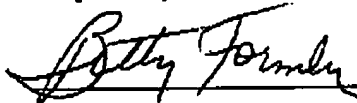
**VIII. Conclusion**

It is respectfully urged that the subject application is patentable over the cited references and is now in condition for allowance.

The examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: May 30, 2006

Respectfully submitted,



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